

# Assigning Values to Life

## Comparing Methods for Valuing Health Risks

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### Introduction

Foodborne disease caused by microbial pathogens in food is a serious public health problem in the United States. Each year there are between 6 and 33 million cases of disease caused by pathogens such as *E. coli* O157:H7 and *Salmonella*, and as many as 9,000 people may die from these illnesses. Recent highly publicized outbreaks of foodborne illness and recalls of potentially contaminated foods have raised public concern, and have led the Federal Government to undertake a number of programs to reduce the risk to public health from microbial pathogens in the food supply. The key issue from an economic perspective is how to measure the potential benefits and costs of efforts to reduce human health risk.

In this report, we examine five approaches that have been developed by economists and health policy analysts for evaluating policy affecting health and safety: cost-of-illness, willingness-to-pay, cost-effectiveness analysis, risk-risk analysis, and health-health analysis. Our goals are to determine exactly what analysts measure when they use each approach, determine the appropriate use for each approach, and most important, examine the influence that specific assumptions embedded in the various approaches have on policy recommendations. We consider a number of questions during our investigation.

- Whose costs and benefits are we measuring? Whose goals are we trying to satisfy?

- How is the problem of resource scarcity reflected in calculations? Can we rank programs? Can we calculate net benefits, determining whether any program is worthwhile?
- Is it feasible to measure what we intend to measure?

The answers to these questions help to reveal the strengths and weaknesses of the five approaches. They reveal the type of information that each approach provides to policymakers.

In the first section, “Why Must Costs and Benefits Influence Health and Safety Choices?” we discuss the importance of using consistent measures of costs and benefits in evaluating government policies to reduce health and safety risks. We argue that if government policy were guided by consistent comparisons of program costs and benefits, health benefits would be larger and costs would be smaller. In “How Do We Measure Costs and Benefits for Health and Safety Intervention? An Introduction to the Methodologies,” we present a brief description of the various ways costs and benefits might be compared. We list and describe the basic attributes of different methods, depending on whether health and safety benefits are assigned dollar values. In “Cost-of-Illness Approach,” we describe the cost-of-illness method for assigning value. In “Willingness-to-Pay

Approach,” we describe the willingness-to-pay method and compare the various methods for estimating willingness-to-pay. In “COI and WTP—Is There a Middle Ground?” we compare the cost-of-illness and willingness-to-pay methods and examine the common assumption that cost-of-illness estimates are a lower bound to willingness-to-pay estimates. In “Refraining from Assigning Values to Life and Health: Cost-Effectiveness Analysis,” we discuss cost-effectiveness analysis and show the limitations

to using analyses that fail to monetize health benefits. Surprisingly, in many cases this method does require assigning values to life and health and those values are exactly equal to forgone income. In “Eliminating Dollars from Cost-Benefit Comparisons—Risk-Risk and Health-Health Analysis,” we show which of the desirable characteristics of conventional cost-benefit analysis can be maintained when neither costs nor benefits are monetized.